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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,600	08/26/2003	Jerome R. Edwards	JRME:001US	4961

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EXAMINER

CHENG, JACQUELINE

ART UNIT

PAPER NUMBER

3768

MAIL DATE

DELIVERY MODE

05/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/649,600	EDWARDS, JEROME R.	
	Examiner	Art Unit	
	Jacqueline Cheng	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 14 March 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 21,22,24-27,29-33 and 45-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 21,22,45 and 46 is/are allowed.
- 6) Claim(s) 24-47 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. **Claims 21, 22, 45, and 46** are allowed.
2. The indicated allowability of claims 24-27, 29-35, and 47 is withdrawn in view of the newly discovered reference(s) to Wang (US 6,198,959 B1). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 24-27, 29-33, and 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Solomon (US Publication No. 2003/0018251) in view of Verard (US Publication No. 2004/0097805) further in view of Wang (US6,198,959 B1). Solomon discloses a method and apparatus for superimposing the position and orientation of a diagnostic and/or treatment device on a plurality of previously acquired 3d images such as a CT or MRI images to enable navigation of the device to a desired location in synchronization with a beating heart (abstract). In this dataset of a plurality of images associated with the cyclical movement of the heart such as using cardiac gating, there are reference markers to allow the patient and the images to be aligned consistently later in the operating room (paragraph 0033). Although Solomon discloses that these

reference markers be placed on the chest, it is well known in the art of image guided navigation system being synchronized to a physiological event, to place reference markers internally as disclosed in Verard. In Verard the reference frame (marker) for registration and consistent alignment can be internally attached to the wall of the patient's heart. This reference frame is designed to be fixed to the patient adjacent to the region being navigated so that any movement of the patient is detected as relative motion between the transmitter coil array (element 46, an external reference frame) and the reference frame. The relative motion is forwarded to the coil array control which updates registration correlation (outputting data values to the coil array control which updates the registration correlation by showing the image (I1) associated with the data values of the relative motion) (paragraph 0074-0075).

5. Both systems of Solomon and Verard use an ECG gating device to match up the cycles in the pre-operative images with the current heart cycle to show the proper image of the current placement of the heart with the superimposed device (Solomon - paragraph 0053, Verard - paragraph 0076). However there are many other well known methods in the art, of matching up the pre-operative images with the current heart cycle. One of these methods is disclosed by Wang. In Wang, instead of using ECG gating to display the image, a more accurate method is used. The imaged is pulled up by using a look-up table of views for any combination of respiratory and cardiac phase, instead of just being gated to an ECG cycle and heart motion movie (col. 2 line 61-col. 3 line 5). It would be obvious to one skilled in the art to use the look-up table method of Wang with Solomon and Verard in order to further the utility of Solomon and Verard to provide a more accurate image for the navigation of the device.

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6. **Claim 34 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Solomon, Verard, and Wang further in view of Vesely (6,246,898 B1). Neither Solomon, Verard, or Wang explicitly disclose calculating a vector and associating the vector with the image. Instead they generally disclose calculating a relation between the instrument and the image space. It would be obvious to use any method well known in the art to perform this calculation such as the method in Vesely. Vesely also discloses a tracking and imaging system of a surgical instrument. The instrument is fitted with tracking sensors (mobile transducers) and the body with reference markers (which can be placed internally), like in Solomon and Verard, providing a position of the instrument relative to the body. Information from the tracking sensors on the instrument, from the other internally placed sensor in the region, and from the external reference markers are translated into vector data which in turn can be used to illustrate the position and the direction of the tip (col. 21 line 11-19).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Thomson (US 7,171257 B2) discloses a look-up table of positional data along the heartbeat cycle for use in directing a radiosurgical beam.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Cheng whose telephone number is 571-272-5596. The examiner can normally be reached on M-F 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC



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